

**WHAT IS CLAIMED IS:**

- 1        1.    ~~An image processing method, comprising:~~  
2        warping an initial line pattern to produce a warped line pattern; and  
3        mapping an original image onto the warped line pattern to produce an  
4        engraving-style halftone image.
- 1        2.    The method of claim 1, wherein the initial line pattern is warped  
2        based upon pixel values of the original image.
- 1        3.    The method of claim 1, wherein the initial line pattern is oriented  
2        substantially along an initial direction and the initial line pattern is warped in a  
3        direction substantially orthogonal to the initial direction.
- 1        4.    The method of claim 1, wherein the initial line pattern is warped  
2        based upon a density map extracted from pixel values of the original image.
- 1        5.    The method of claim 4, further comprising producing a density map  
2        by sampling pixel values of the original image.
- 1        6.    The method of claim 1, wherein the initial line pattern is warped  
2        based upon gradient information computed from pixel values of the original  
3        image.
- 1        7.    The method of claim 6, further comprising computing gradient  
2        information for a pixel location based upon a weighted averaging of gradient  
3        information computed from neighboring pixel values.
- 1        8.    The method of claim 1, wherein the initial line pattern is warped  
2        based upon a set of displacement values computed for pixel locations along each  
3        line of the initial line pattern.
- 1        9.    The method of claim 1, wherein the initial line pattern is warped by  
2        inserting or removing one or more lines between adjacent lines of the initial line  
3        pattern.

1        ~~10. The method of claim 1, wherein the original image is mapped onto~~  
2        ~~the warped line pattern based upon a comparison of original image pixel values~~  
3        ~~and warped line pattern pixel values.~~

1        11. The method of claim 10, wherein the original image is mapped onto  
2        the warped line pattern by producing black pixel values of the engraving-style  
3        image at pixel locations where original image pixel values are less than  
4        corresponding warped line pattern pixel values, and producing white pixel values  
5        of the engraving-style image at pixel locations where original pixel values are  
6        greater than or equal to corresponding warped line pattern pixel values.

1        12. An image processing system, comprising a processor programmed to  
2        warp an initial line pattern to produce a warped line pattern, and to map an  
3        original image onto the warped line pattern to produce an engraving-style  
4        halftone image.

1        13. The system of claim 12, wherein the initial line pattern is warped  
2        based upon a density map extracted from pixel values of the original image.

1        14. The system of claim 13, wherein the processor is programmed to  
2        produce a density map by sampling pixel values of the original image.

1        15. The system of claim 12, wherein the initial line pattern is warped  
2        based upon gradient information computed from pixel values of the original  
3        image.

1        16. The system of claim 15, wherein the processor is programmed to  
2        compute gradient information for a pixel location based upon a weighted  
3        averaging of gradient information computed from neighboring pixel values.

1        17. The system of claim 12, wherein the initial line pattern is warped  
2        based upon a set of displacement values computed for pixel locations along each  
3        line of the initial line pattern.

1        18. The system of claim 12, wherein the initial line pattern is warped by  
2        inserting or removing one or more lines between adjacent lines of the initial line  
3        pattern.

